



Nr. 9972-210310
Multi-winch
model 2103

Description, operating
Instruction and maintenance

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DESCRIPTION, OPERATING AND MAINTENANCE INSTRUCTIONS

MULTI - WINCH 2103

Multi-winch 2103 - a hydraulic powered - 2 speed combined capstan and drum winch with a large capacity. For overhead lines or underground cables. Fitted with double bull wheels and a separate storage drum for the pulling rope. For pulling overhead lines especially ABC cable a synthetic pulling rope is used. A steel wire rope is used with underground cables. The full 1000 Kg pulling force is always available due to the capstan system. The rope can easily be wound on or off of the bull wheels, which are open at the side. The rope drum is also easily dismantled.

When changing conductors or winding in old ones the 2100 can be used as a drum winch. A split drum can be fitted to the outlet shaft of one of the bull wheels (only certain models). Drums with large amounts of pilot rope (max. 1100 m) can also be used to pull long lengths of smal conductors when the pulling force requirement is not too great. The machine is fitted with a line spreader.

TECHNICAL DATA

Pulling force:	Max. 500/1000kp (infinitely variable)
Speed: Max.	20/40 m/min.
Pulling rope:	For ABC cables 500 m synthetic rope, 8 mm. For underground cables 500 m steel wire max. 8 mm. The special underground winch with adjustable dynamometer, max. 5 mm steel wire rope.
Engine:	Four-stroke petrol engine 13Hp
Drive:	Hydraulic operation with air-cooled hydraulic oil tank.
Weight:	260 kg (without rope).

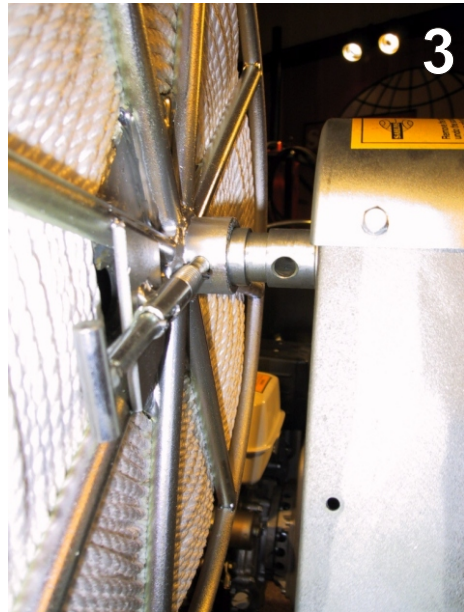
OPERATING

Remove the machine from the towing hook. Screw the jockey wheel up as far as possible. Then adjust the support legs to a suitable height and lock them, now screw the jockey wheel down so that the machine rests firmly on the support legs. When necessary (when pulling heavy duty conductors cables) also anchor at the pulling eye.



FITTING THE DRUM

Fit the drum so that the catch on the drum fits against the locking hole on the drum shaft. To pay out the rope, fit the drum so that the catch goes into the slot to disengage the drum (3) and feed direct from the drum. When winding in, the drum is locked by allowing the catch to go through the locking hole on the drum shaft. Fitting the drum to the outlet shaft of the bull wheel: run the winch so that the wide slot on the shaft points at angle, forward and upwards. Fit the drum with the catch pulled in and slide the drum coupling into the slot and turn so that the catch engages (4), lock the bearing cover to the axle end using the eccentric lock.

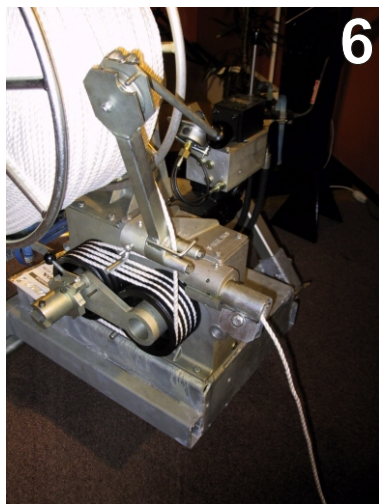
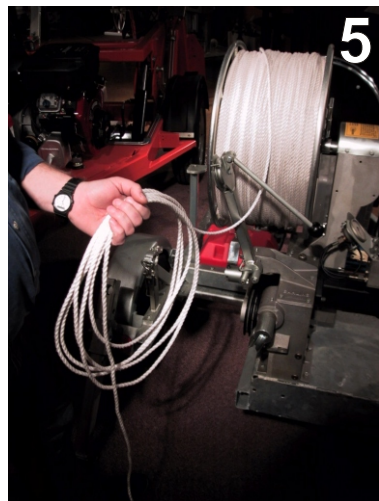


FITTING THE ROPE ON THE BULLWHEELS

Overhead line winch: Make 5 loops as shown in picture (5). Start by fitting the last loop's outgoing rope in the inlet roller on the winch and then thread the rope around all the grooves on the bull wheel and then through the line spreader to the drum (6).

Special underground cable winch: Make five loops in the steel wire (as for the overhead winch, 5). Fit the wire through the inlet roller and then around the rear measuring wheel and forward to the underside of the bull wheel. Now fit the wire around each groove on the bull wheels and through the line spreader on to the drum (7). Fit the protective covers over the bull wheels and lock into position using the front and back screws.

NOTE! be extremely careful when fitting the covers and check that the steel wire runs correctly in the bull wheel grooves



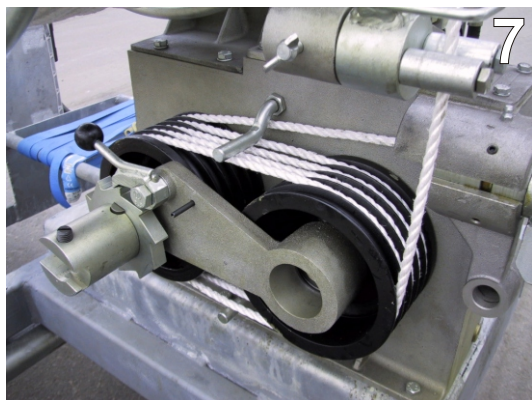
BEFORE STARTING

Check the oil level: (make sure the winch is standing level).

Engine, refill if necessary up to the "Full mark" on the dipstick, pour gently. Slide the dipstick in fully so that the cap rests against the pipe when checking the oil.

The dipstick must always be fully inserted into the pipe while the engine is running.

Hydraulics, see level glass (8), the oil level between minmax marking. Refill oil at the bleed nipple on the upper side of the tank (22 mm spanner). 4



STARTING AND STOPPING THE ENGINE

Fill with petrol, 95 octane unleaded or 96 octane Set the lever in choke or start position. Stop switch to the "ON" position. Give a little throttle.

Alt. 1 Pull the starter handle firmly. Never pull the starter cord out completely or let the starter handle fly back, let it gently return to its starting point.

Alt 2. Turn the key to start position.

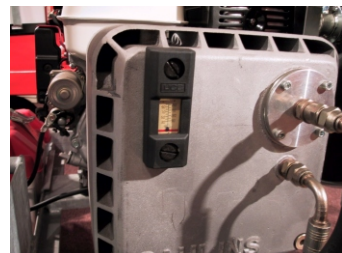


As soon as the engine has started gradually return the choke lever. Always start a warm engine without choke.

Run warm for approx. 5-10 minutes before pulling cable/rope.

Always run at full throttle while winding cable/rope.

When stopping, set the stop switch to the "OFF" position.

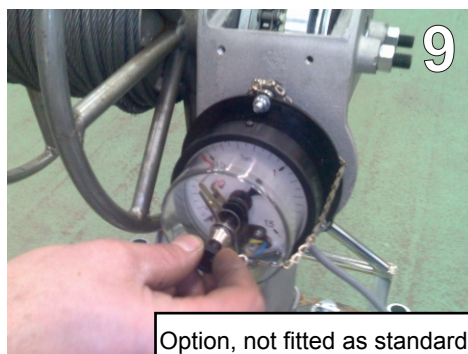


WINCHCONTROL

Control of the speed, power force, and forward/backward movement is made through the controls located on the winch unit. Manometer for reading-off the pulling force (the special underground winch is also fitted with a dynamometer for presetting the max. permitted force).

SETTING THE PULLING FORCE

Special underground winch: The shortcircuiting cable from the dynamometer is connected to the engine. When the preset max. force is reached the engine stops. To restart the engine a higher value must be set. The maximum permitted pulling force is



Option, not fitted as standard

set on the dynamometer. Remove the centre cap and the red indicator is then turned using the attached key. Press down while turning (9).

Overhead line winch (with manometer and adjustable relief valve):

The pulling force is set using an adjustable relief valve (10). Unscrew the handwheel on the valve completely (anti-clockwise). Set the lever on the direction valve for winding. Now screw the handwheel in until the bull wheels and the drum rotate, then screw the handwheel a further 1-1,5 turns. This means the maximum permitted pulling force is set just above the value currently displayed on the manometer, i.e. if the rope for some reason sticks or "runs-off" the drum on the drum unit the power force will increase and reach the preset maximum power force level causing the relief valve to blow and the winch to stop. This is to prevent the risk of pulling the conductor apart or damaging poles. As the winding progresses the pulling force requirement increases which means the valve must be periodically adjusted. When the force required increases and the winch shows a tendency to stop or it has difficulty, screw the force setting handwheel in 1-1,5 turns and continue until the winding is complete. Another option is to set the maximum pulling force by fixing the pulling rope to a fixed object, then unscrew the handwheel (anti-clockwise) completely. Set the lever on the direction valve for winding and screw in the handwheel on the force setting valve until the required maximum permitted pulling force is reached, then lock the handwheel using the locking nut.



MAINTENANCE

Engine: See engine manual.

HYDRAULIC SYSTEM

The hydraulic oil should be inspected or changed at least once a year. The tank should be cleaned if the oil leaves a sediment in the bottom of the tank. Hydraulic oil: OK Delta oil 32 Shell Tellus T32 or equivalent. Tank volume: approx. 9 litres.

Hydraulic oil filter: The filter is replaced after approx. 200 hours, however, at least every 6 months. The oil filter should always be changed when changing the oil or if major repairs are carried out on the hydraulic system. The filter cartridge should never, under any circumstances, be washed, as

this can cause serious damage to the system if reused. Always replace using a new cartridge. Hydraulic oil filter: 10 my (Art No. 1011-1125). Check controls and all hydraulic couplings for leakage, tighten couplings if found to leak.

CHASSIS

The chassis is galvanised and requires no special attention. Check the forward jockey wheel and tyres periodically.
Tyre pressure 2.75 Bar

WINCH UNIT

The oil level in the winch housing is checked at the oil level plug on the forward end plate. Fill if necessary using gear box oil 80W90, refill at the bleed nipple above the winch housing. The oil is changed once a year, approx 3 litres. Lubricate the line spreader (and the pulling force sensor arm, at the lower, rear end of the winch) using grease. If necessary lubricate the chain, open the cowl at the top above the slip clutch. Make sure that no oil spills on the friction lining. Lubricate the bearings on the inlet roller, bull wheel and the line spreader wheel/roller. Grease the line drum shaft and support bearing for the winding wheel/winch drum on the chassis. Check the rope periodically for damage.

The drive chain for the collection drum can be adjusted using the chain tensioning device on the drum holder frame. (14)



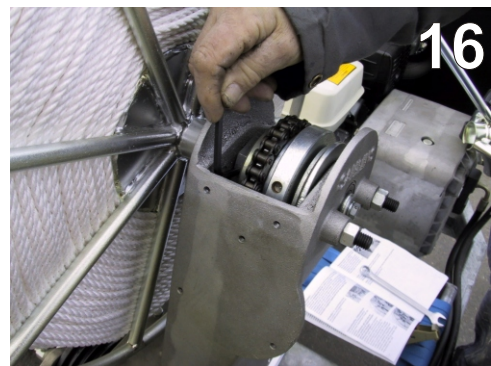
GENERAL

Lift the winch using the forward lifting eye and the upper hole of the support leg, use an approved lifting device. Weight approx. 260 kg, without rope.

Friction clutch friction brake: To gain access to the friction clutch/-brake remove the protective cowl on top of the frame. If the bull wheels rotate without any rope being wound in, the friction clutch is too loose.

The friction brake, which prevents the drum from "running away" can be adjusted. Loosen the locking nuts and adjust using the Allen screws. Adjustments are made with a fully wound drum. Pull out some of the rope through the bull wheels and make sure it does not run too sluggishly and that the drum does not rotate too long after you have stopped. (17)

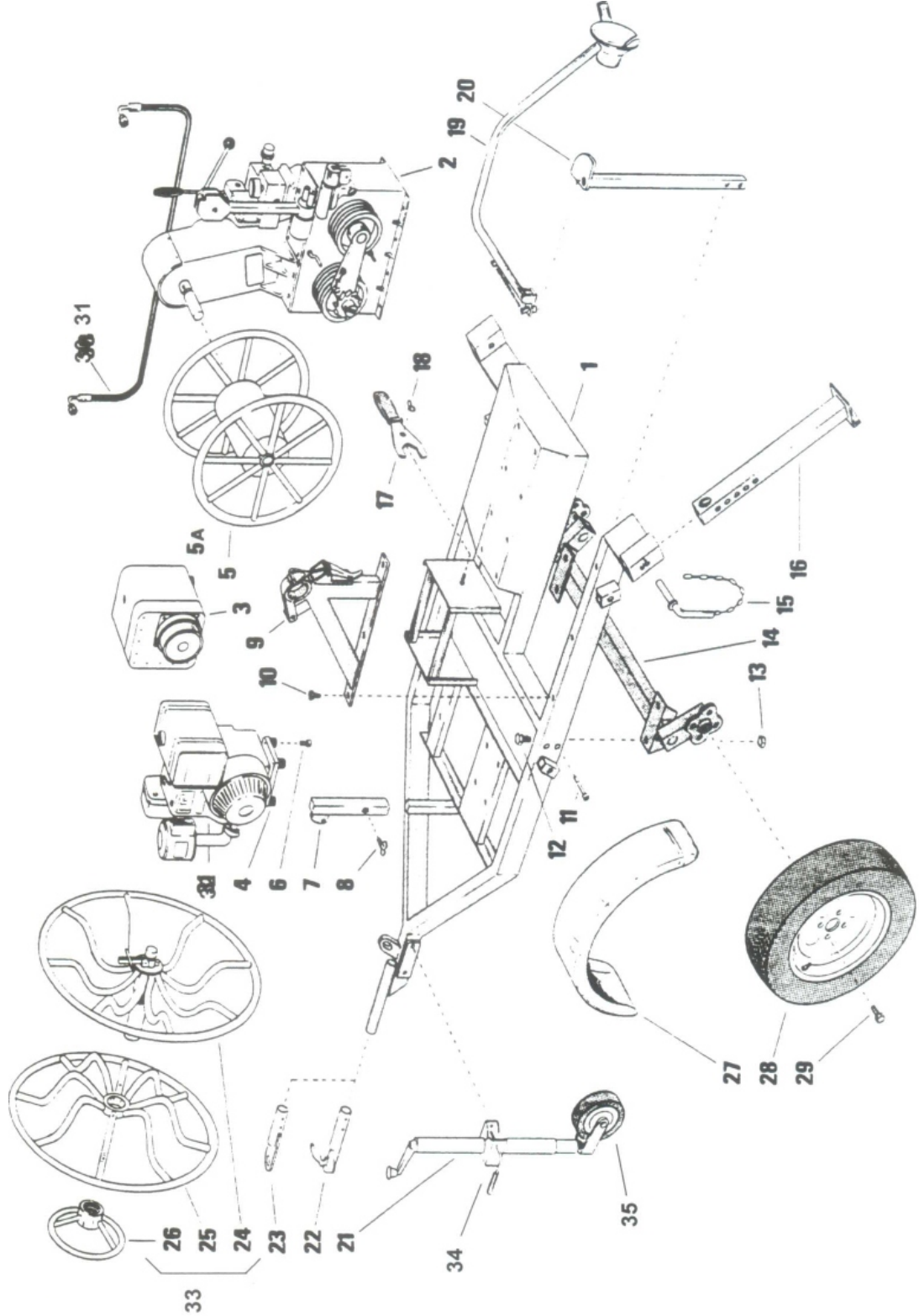
The friction clutch can be adjusted if necessary. The Allen, locking screws on the adjustment nuts must first be loosened (15). Adjustments should be made with a full drum and the friction brake should be adjusted first. (17) The nut is turned using a special spanner (supplied with the machine). Tighten until the winch begins to pull, checking that the maximum pulling force (1000 kg) is reached. NOTE! do not tighten too much. (16)



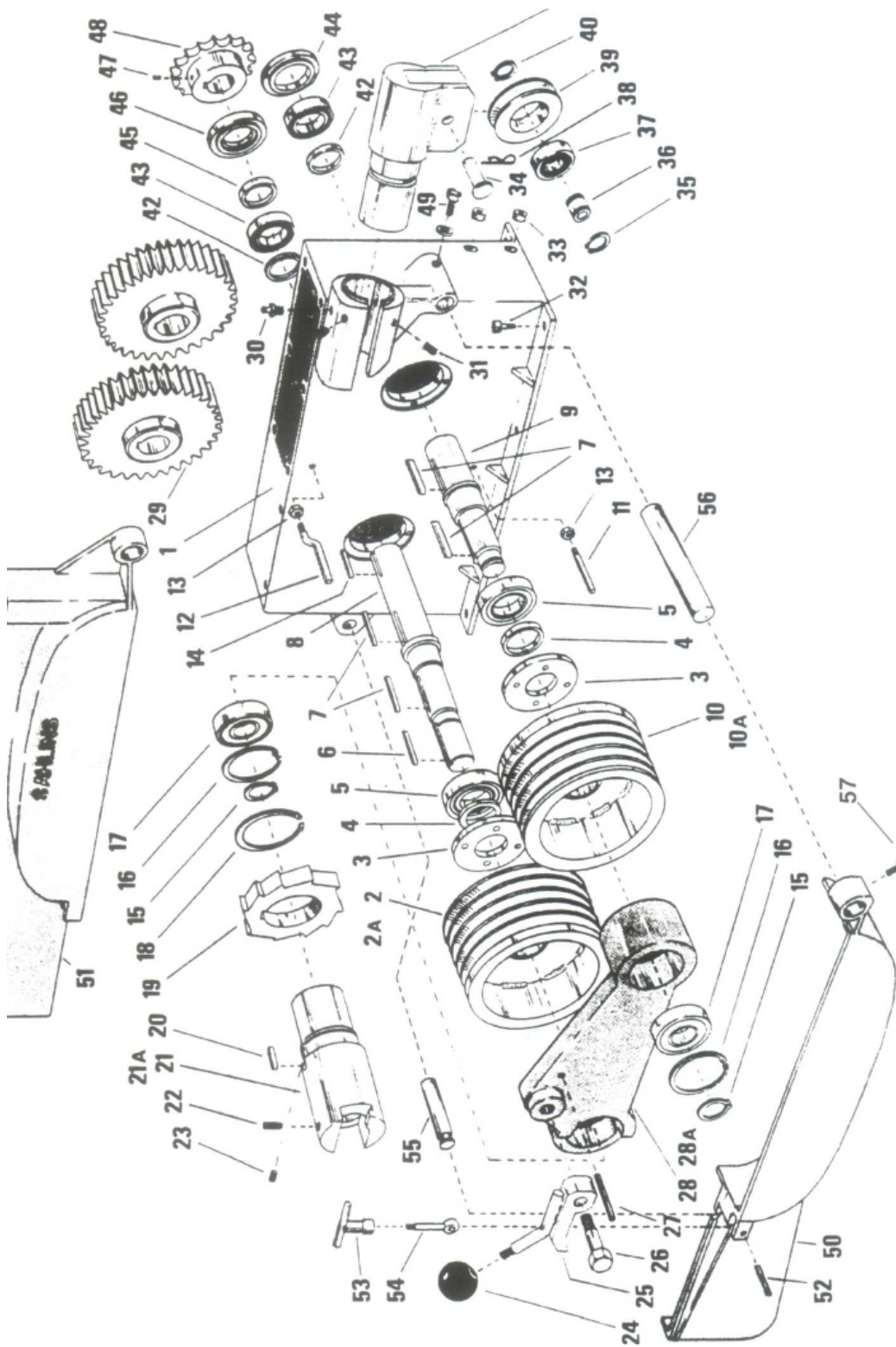
BATTERIES

THE LEAD ACID BATTERY IN THIS WINCH CAN BE RETURNED TO CLYDESDALE FOR SAFE AND ENVIRONMENTALLY SOUND DISPOSAL AT ANY POINT DURING THE MACHINE'S LIFE.

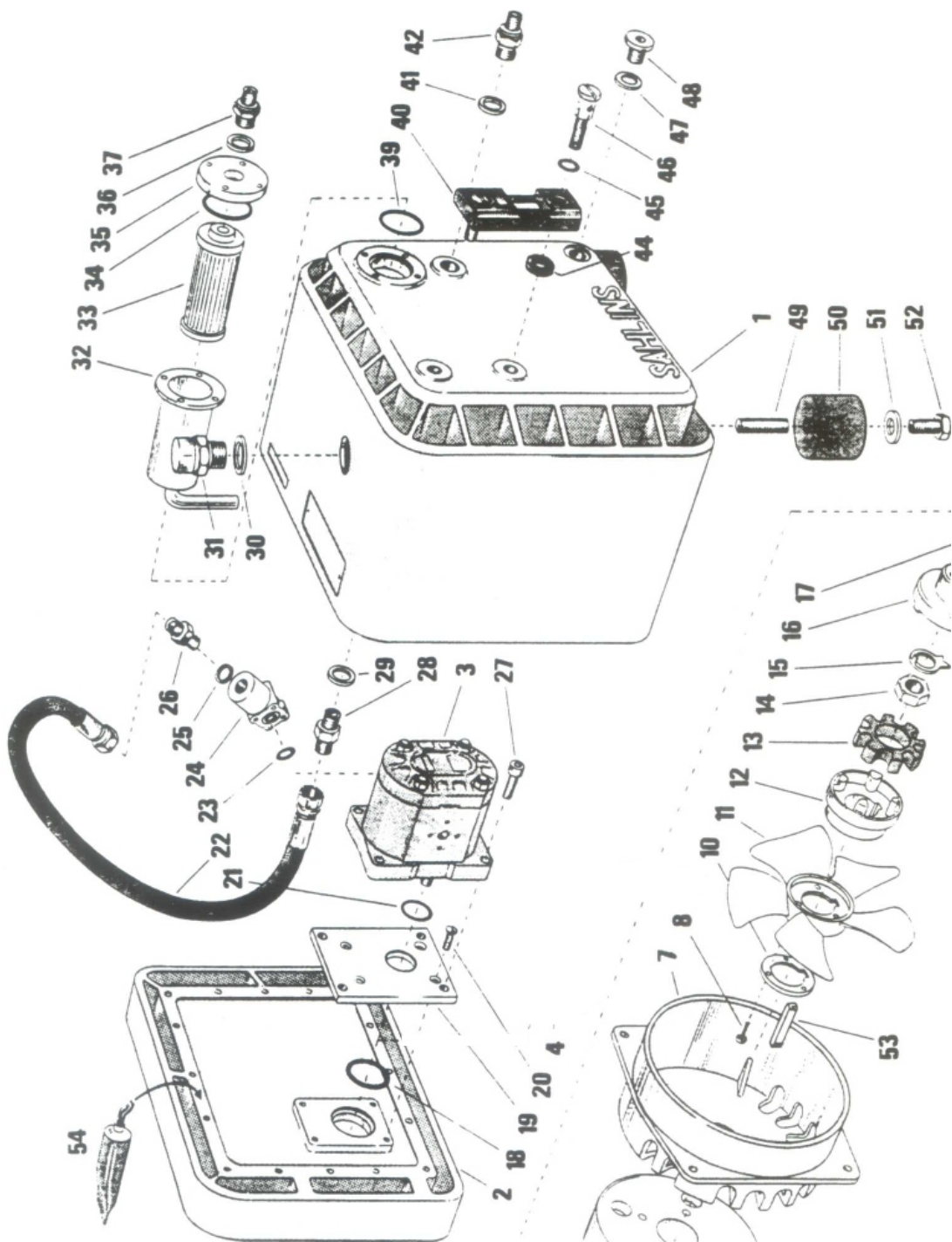
IF RETURN OF THE BATTERY TO CLYDESDALE IS EITHER NOT POSSIBLE OR NOT CONVENIENT THEN PLEASE RETURN THROUGH A LOCAL ENVIRONMENT AGENCY APPROVED COLLECTION POINT LOCAL TO YOU.



Ref.No	Art.No	Part Name
1	2100-5010	Frame
2	See page 12	Winch unit with 6 mm wheels
2A	See page 12	Winch unit with 10 mm wheels
3	See page 15	Hydraulic tank
4	9503-001	Chusioneer R39 M8
5	3060-0021	Drum, Ø 530
5A	3060-0010	Drum, Ø 395
6	9361-08012	Screw M8x12
7	2100-0050	Drum stand
8	9401-08016	Wing screw
9	2100-0200	Support bearing
10	9361-08020	Screw M8x20
11	9371-08080	Screw M8x80
12	9361-12040	Screw M 12x40
13	9422-12	Lock nut M12
14	9580-002	Wheel shaft
15	2100-5009	Pin
16	2100-5010	Support leg
17	3060-0080	Friction clutch spanner
18	9425-10	Wing nut M10
19	9809-010	Line spreader
20	2100-5040	Line spreader attachment
21	9583-001	Jockey wheel unit
22	9582-007	Ball head
23	2100-0030	Pulling eye
24	See 33	Split drum part, shaft-side
25	See 33	Split drum part, wheel-side
26	See 33	Split drum wheel
27	2100-5012	Mud guard
28	9581-007	Wheel
29	9589-006	Wheel screw
30	9631-314101	Hydraulic tube L = 1410
31	9631-314301	Hydraulic tube L = 1430
32	9602-0132	Engine Honda 13Hp
33	2040-0010	Split Drum
34	9583-002	Clamping sleeve
35	9583-003	Jockey wheel

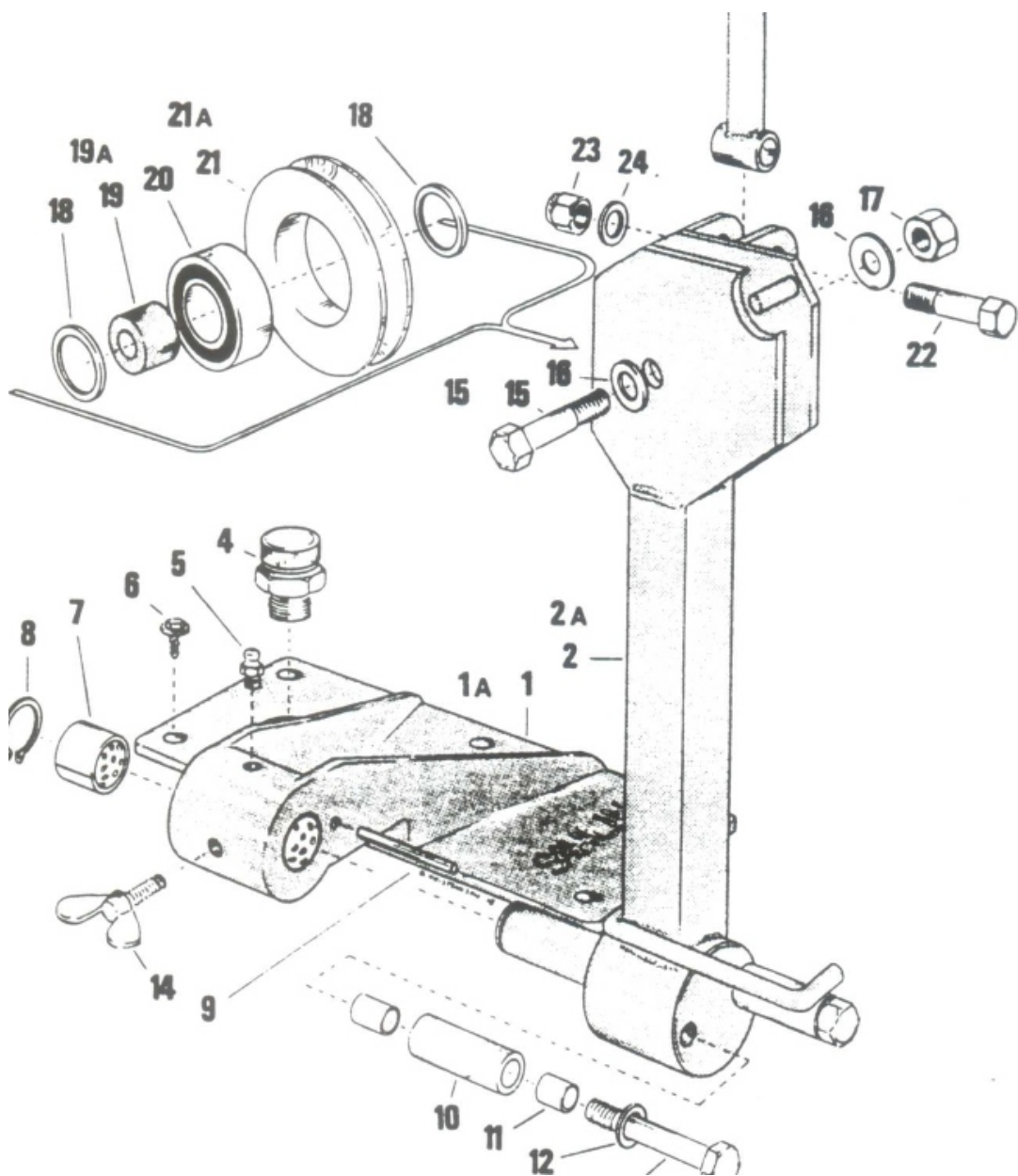


Ref.No	Part.No	Part Name	Ref.No	Part.No	Part Name
1	3060-5001	Winch housing	38	9342-040	Locking pin 4 mm
2	3062-5001	Bull wheel	39	3060-5010	Guide roller
2A	3060-5002	Bull wheel	40	9302-020	Lock ring SgA 20
3	3060-5004	Bearing lid	41	3060-5011	Nose wheel casing
4	9462-30477	Sealing ring 30-47-7	42	3060-5012	Space casing
5	9201-6006-0	Ball bearing 6006	43	9201-6006-0	Ball bearing 6006
6	9322-0840	Flat key type T 8-7-40	44	3060-5013	Cover
7	9321-0840	Flat key type R 8-7-40	45	9462-30477	Seal ring 30-47-7
8	3060-5005	Bull shaft	46	3060-5004	Bearing cover
9	3060-5006	Bull shaft	47	9374-08010	Stop screw M8-10
10	3062-5002	Bull wheel	48	3060-5014	Chain wheel
10A	3060-5003	Bull wheel	49	9361-06020	Screw M6-20
11	3062-5003	Cable pin, lower	50	3060-5015	Cover, lower
12	3062-5004	Cable pin, upper	51	3060-5016	Cover, upper
13	9424-12	Nut M12	52	9344-08040	Roll pin FRP 8-40
14	9321-0830	Flat key type R 8-7-30	53	9802-1360	Lock nut
15	9302-025	Lock ring SgA 25	54	9403-10050	Screw LS10-50
16	9301-047	Lock ring SgH 47	55	3060-5017	Shaft
17	9201-6005-2	Ball bearing 6005 2RS	56	3060-5018	Shaft
18	9302-050	Lock ring SgA 50	57	9401-08016	Wing screw M8-16
19	3062-5005	Catch wheel			
20	9322-1416	Flat key type T 14-9-16			
21	3062-5006	Shaft coupling type C			
21A	3062-5007	Shaft coupling type B			
22	9389-001	Thrust screw M12			
23	9374-08006	Grub screw M8-6			
24	9511-2508	Knob M8-25			
25	3062-5008	Chatch hook			
26	3062-5009	Screw M12-37 spec.			
27	9344-04036	Roll pin FRP4-36			
28	3062-5010	Shaft spacer			
28A	3060-5007	Shaft spacer			
29	3062-5011	Gear wheel			
30	9551-06	Grease nipple M6			
31	9373-06016	Stop screw M6-16			
32	9361-08040	Screw M8-40			
33	9621-VSTIR1/4" ED	Oil tap1/4"			
34	3060-5008	Nose wheel shaft			
35	9302-020	Lock ring SgA 20			
36	3060-5009	Space casing			
37	9201-6004-2	Ball bearing 6004 2RS			

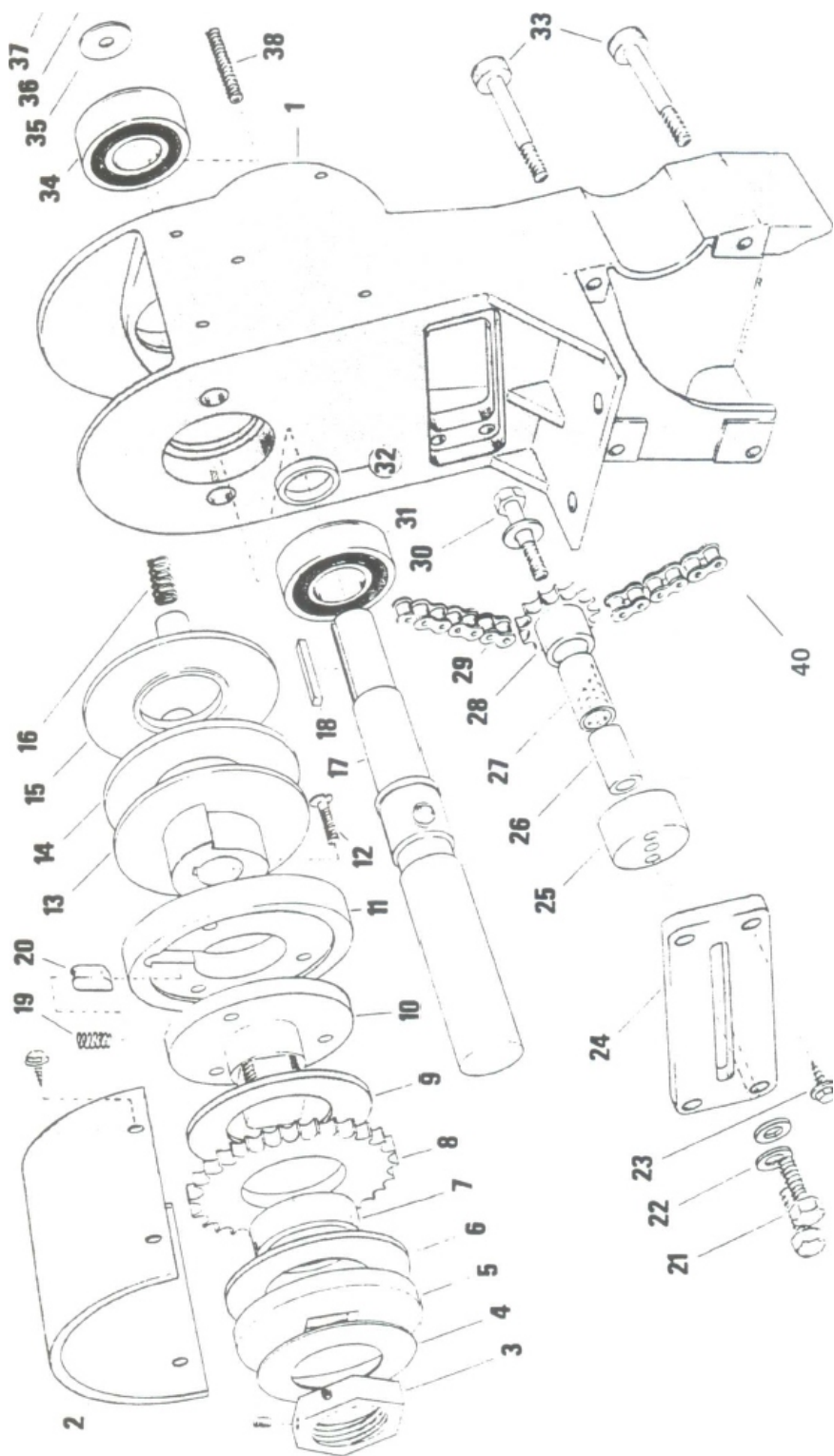


			Qty.	
Ref.No	Art No	Part Name	Overh. Undgr.	
			winch	winch
1	1010-5001	Tank body	1	1
2	1010-5002	Cover body	1	1
3	9642-00601	Hydraulic pump PLP6,3D	1	1
4		Hydraulic pump		
5	1013-5005	Shaft spacer - engine	1	1
6	1012-5001	Intermediate spacer - engine	1	1
7	1010-5003	Distance piece	1	1
8	9381-04016	Retaining screw MCS 4-16	3	3
9				
10	2103-4020	Washer	1	1
11	2103-4020	Fan 6,625-5/25 CCW	1	1
12	2103-4020	Drive coupling ND10 - engine side	1	1
13	9610-010-04	Rubber spider	1	1
14	SES	Nut M12-1,5	1	1
15	SES	Lock washer	1	1
16	9610-010-02	Drive coupling ND 10 - pump side	1	1
17	9323-003	Woodruf key 3,15-6,5-16	1	1
18	9461-44624	O-ring 44,6-2,4	1	1
19	1012-5006	Intermediate spacer - pump	1	1
20	9372-06020	Screw F6S M6-20	4	4
21	9461-36020	O-ring 36-2	1	1
22	9631-305001	Hydraulic tube	1	1
23	SES	O-ring OR121	1	1
24	9649-004	Connection flange R38/30-Q	1	1
25	9633-GBR3/8	Washer GB-R3/8	1	1
26	9632-R83566	Adapter R835-6-6	1	1
27	9371-08030	Hexagon socket cap screw MC6S M8-30	4	4
28	9632-R83566	Adapter R835-6-6	1	1
29	9633-GBR3/8	Washer GB-R3/8	1	1
30	9633-GBR3/8	Washer GB-R3/8	1	1
31	9674-001	Plug MTSF 3/8	1	1
32	1010-5013	Hydraulic filter hood	1	1
33	9671-001	Filter cartridge 0060 R010P	1	1
34	9461-57624	O-ring 57,6-2,4	1	1
35	1010-5011	Filter cover	1	1
36	9633-GBR3/8	Washer GB-R3/8	1	1
37	9632-R83566	Adapter R835-6-6	1	1
38				
39	9461-57624	O-ring 57,6-2,4	1	1
40	9673-001	Level glass (incl 44,45,46)	1	1
41	9633-GBR3/8	Washer GB-R3/8	1	1

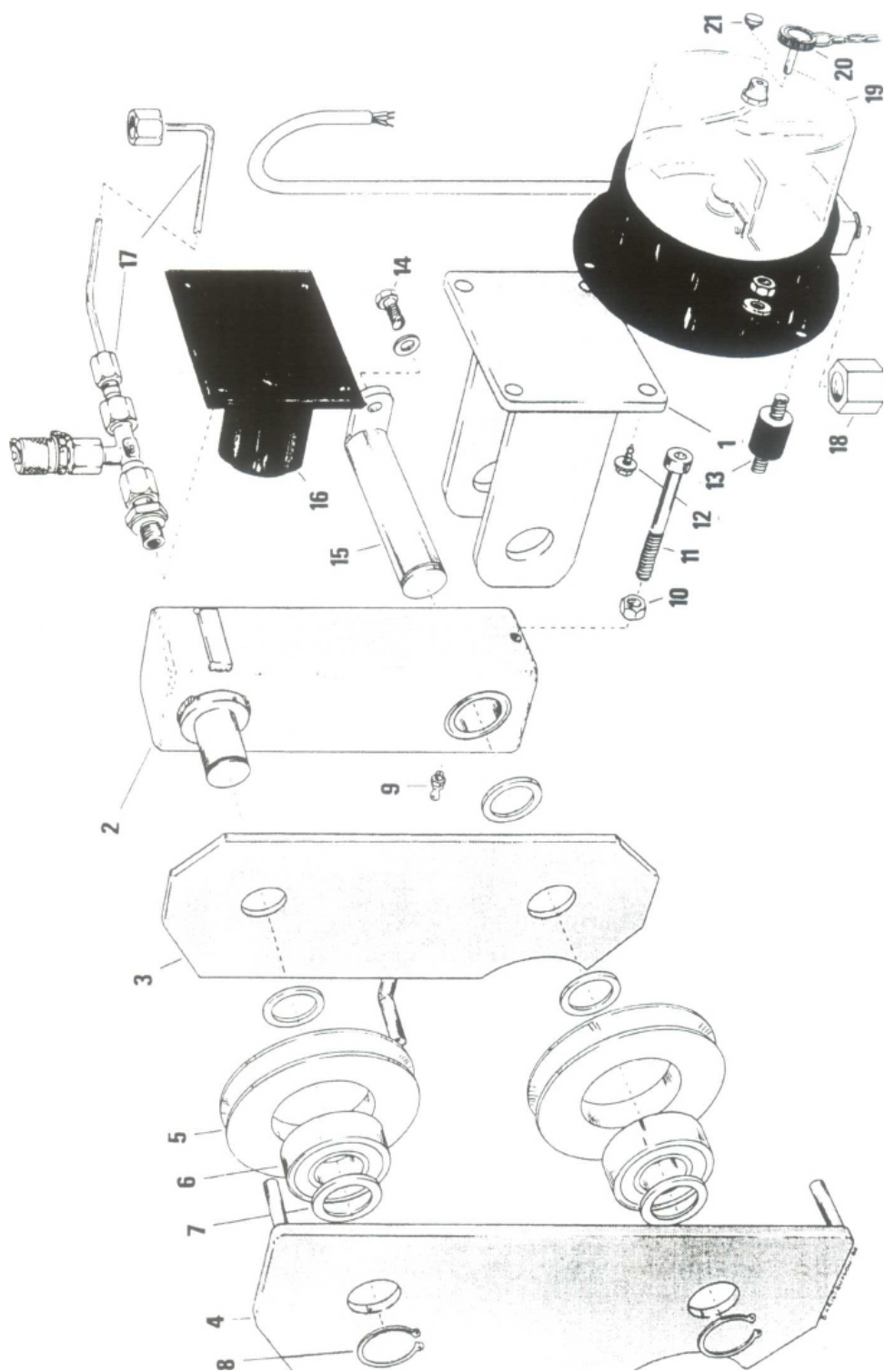
Ref.No	Art.No	Part Name	Qty.	
			Overh. winch	Undgr. winch
42	9632-R83566	Adapter R835-6-6	1	
44	SES	Sealing ring (se 40)	2	
45	SES	O-ring (se 40)	2	
46	SES	Screw (se 40)	2	
47	9633-GBR3/8	Washer GB-R3/8	1	
48	9621-USTIR3/8 ED	Oil tap DIN 908 3/8	1	
49	9373-08025	Stud screw M8-25	2	
50	9503-001	Rubber suspension 26002 R39M8	2	
51	9444-082	Spring washer FBB 8,2	2	
52	9361-08030	Screw M6S M8-30	2	
53	9329-006	Key 1/4"-20	1	
54		Loctite 574 (or equal)		



Ref.No	Art.No	Part Name	Qtyl.	
			Overh. Winch	Undgr. Winch
1	3062-5012	Cover - Line spreader attachment		
1A	3060-5019	Cover - Line spreader attachment		1
2	3062-5013	Line spreader	1	
2A	3060-5020	Line spreader		1
3	3062-5014	Control arm	1	
4	9674-001	Plug MTSF 3/8	1	1
5	9551-06	Grease nipple M6	1	1
6	9391-06020	Screw M6SF-TT-6-20	6	6
7	9254-2020	Slide bearing PDE 20/23-20	2	2
8	9302-020	Lock ring SgA20	1	1
9	9349-001	Grooved pin RPA 5-50	1	1
10	3060-5021	Roller	2	2
11	9254-0810	Slide bearing PDE8/10-10	4	4
12	9441-084	Washer 8,4-17-1,6	2	2
13	9361-08065	Screw M8-65	2	2
14	9401-08016	Wing screw M8-16	1	1
15	9361-08035	Screw M8-35		1
15A	9361-08040	Screw M8-40		
16	9441-084	Washer 8,4-16-1,5	2	2
17	9422-08	Lock nut M8	1	1
18	9449-013	Spacer ring PS20-28-1,0	2	2
19	3062-5015	Spacer	1	-
19A	3060-5022	Spacer		1
20	9201-6004-2	Ball bearing 6004-2RS	1	1
21	3060-5010	Guide roller	1	
21A	3060-5023	Guide roller		1
22	9361-08040	Screw M8-40	1	
23	9422-08	Lock nut M8	1	
24	9441-084	Washer 8,4-17-1,6	1	
25	9511-4012	Knob 40-M12		
25A	9511-3010	Knob 30-M10		1



Ref.No	Part No.	Part Name	Overh. winch	Qty.	
				Undgr.	winch
1	3062-5016	Drum holder - frame		1	1
2	3060-5024	Chain guard		1	1
3	3060-5047	Nut to friction clutch		1	1
4	9485-001	Cup spring friction clutch		1	1
5	3060-5046	Clutch drive plate		1	1
6	9591-001	Friction lining		1	1
7	9229-001	Needle beraing		1	1
8	3060-5026	Chain wheel		1	1
9	9591-001	Friction lining		1	1
10	3060-5045	Hub		1	1
11	3060-5027	Coaster hub, external part		1	1
12	9372-06025	Screw MF6S 6-25		3	3
13	3060-5028	Coaster hub, internal part		1	1
14	9591-001	Friction lining		1	1
15	3060-5029	Brake hub		1	1
16	9481-010	Compression spring SS2387 1,6-8-24,9		2	2
17	3060-5030	Drum shaft		1	1
18	9322-0630	Key 6-6-30		1	1
19	9481-011	Compression spring SF-TF0,75-7-45 SS2331		1	1
20	3060-5031	Catch		1	1
21	9361-08025	Screw M8-25		2	2
22	9441-084	Washer 8,4-17-1,6		2	2
23	9391-06020	Screw M6SF-TT-6-20		4	4
24	3060-5032	Cover		1	1
25	3060-5033	Distance piece		1	1
26	3060-5034	Tube		1	1
27	9251-1525	Slide bearing		1	1
28	3060-5035	Chainwheel		1	1
29	3060-5025	Drive chain with chain lock		1	1
30	9361-08045	Screw M8-45		1	1
31	9201-6005-2	Ball bearing 6005-2RS		1	1
32	3060-5036	Spacer		1	1
33	9371-08080	Hexagon socket cap screw M8-80		4	4
34	9201-6204-2	Ball bearing 6204-2RS		1	1
35	9449-012	Washer		1	1
36	9444-082	Spring washer		1	1
37	9361-08020	Screw M8-20		1	1
38	9374-12030	Grub screw M12-30		2	2
39	9421-12	Nut M12		2	2
40	9542-0813-1	Chain lock		1	1

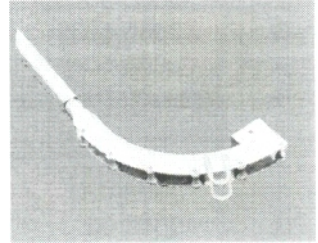


Ref.No	Part No.	Part Name	Qty.	
			Overh. winch	Undgr. winch
1	3060-5037	Attachment		1
2	3060-5038	Beam		1
3	3060-5039	Valance, internal	-	1
4	3060-5040	Valance, external		1
5	3060-5023	Guide roller	-	2
6	9201-6004-2	Ball bearing 6004 2RS	-	2
7	9449-013	Spacer ring PS 20-28-1,0		5
8	9302-020	Lock ring SgA20	-	2
9	9551-06	Lubrication nipple M6	-	1
10	9421-06	Nut M6	-	1
11	9371-06060	Hexagon socket cap screw M6-60	-	1
12	9391-06020	Screw M6SF-TT-6-20	-	8
13	9503-003	Chusioner R20-20 24001	-	3
14	9361-06010	Screw M6-10	-	1
15	3060-5041	Cotter	-	1
16	3060-5042	Load sensor	-	1
17	3060-4020	Hydraulic tube with coupling	-	1
18	9621-MAV6-PLR	Adapter		1
19	9672-004	Manometer 10030/88 (incl 20,21)	-	1
20	9672-015	Uea		

Accessories for Multi-winch 2103

Flexible cover, including removable steel frame.

Adjustable manhole boom, for vertical pulling in a manhole.



Rotating warning light and working spot light, only for winch with battery.



Electric starter, including battery and battery box.

